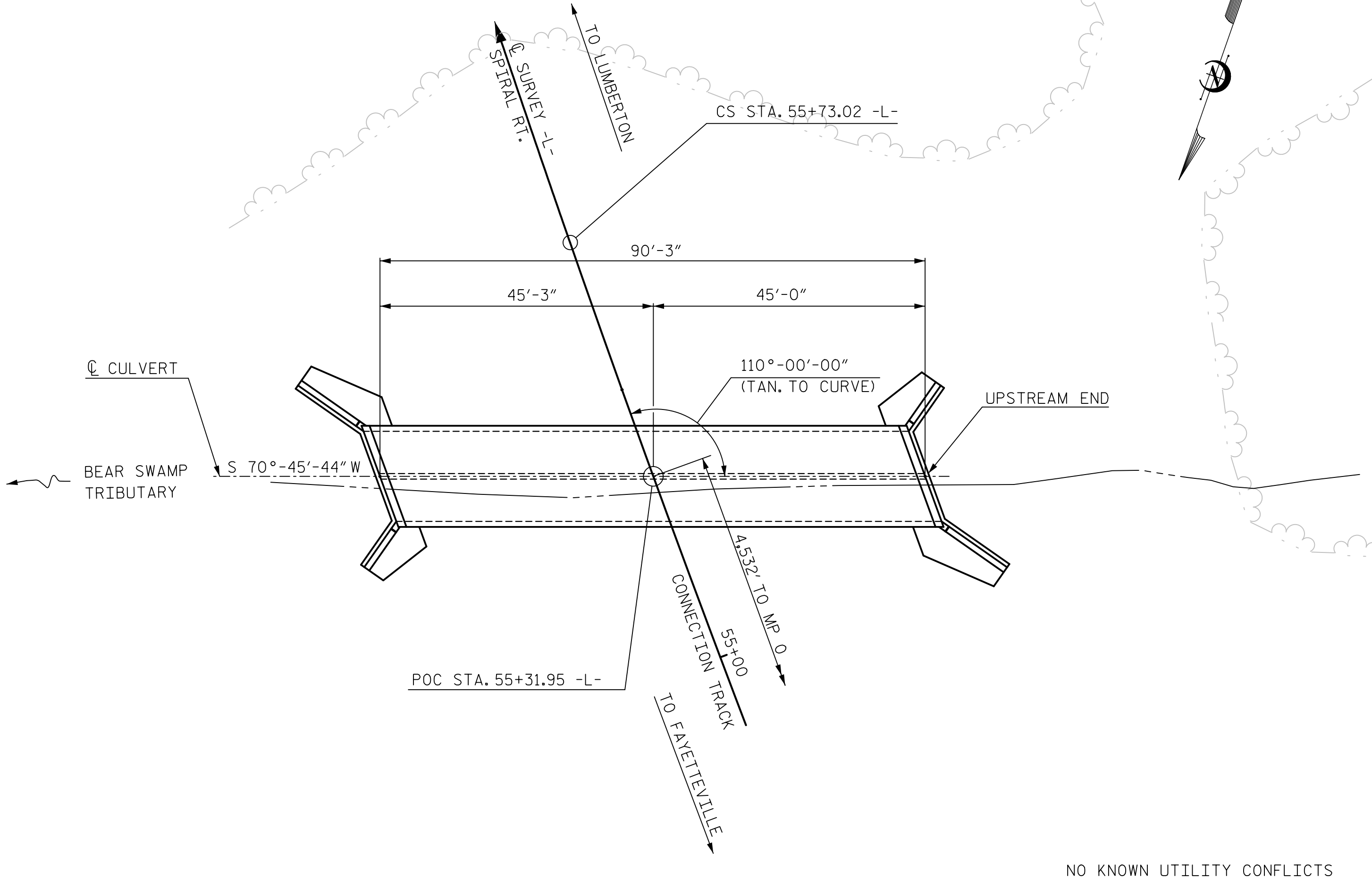


BM - P4900 BY2-12 : -Y1- STA. 19+99.26, 26.34' RT.  
N 341486.6412 E 1945040.0808 EL. 165.99



LOCATION SKETCH

**GRADE DATA**

TOP OF RAIL ELEV. @ POC STA. 55+31.95 -L- = 177.46  
CULVERT BED ELEVATION @ POC STA. 55+31.95 -L- = 153.42  
TRACKBED SLOPES 2:1

**HYDRAULIC DATA**

DESIGN DISCHARGE = 310 CFS  
FREQUENCY OF DESIGN FLOOD = 100 YR.  
DESIGN HIGH WATER ELEV. = 159.51  
DRAINAGE AREA = 199 ACRES  
BASIC DISCHARGE (Q100) = 310 CFS  
BASIC HIGH WATER ELEV. = 159.51

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE = N/A  
FREQUENCY OF OVERTOPPING FLOOD = >500+ YR.  
OVERTOPPING FLOOD ELEV. = 163.3

TOTAL STRUCTURE QUANTITIES	
CAST-IN-PLACE CONCRETE (4,500 PSI)	
BARREL @ 2.25 CY/FT	203.1 C.Y.
WING ETC.	26.8 C.Y.
<b>TOTAL</b>	<b>229.9 C.Y.</b>
REINFORCING STEEL	
BARREL	40,572 LBS.
WINGS ETC.	1,938 LBS.
<b>TOTAL</b>	<b>42,510 LBS.</b>
FOUNDATION CONDITIONING	
MATERIAL, BOX CULVERT	107 TONS
CULVERT EXCAVATION AT STATION POC 55+31.95 -L- LUMP SUM	
PLAIN RIP RAP, CLASS I	64 TONS

**NOTES:**

ASSUMED LIVE LOAD = AREMA E-80

THIS CULVERT HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT EDITION OF AREMA'S MANUAL FOR RAILWAY ENGINEERING, VOL. 2, STRUCTURES.

DESIGN FILL = 16.1' (BASE OF RAIL TO TOP OF STRUCTURE)

FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

FOR OTHER DESIGN DATA AND NOTES SEE STRUCTURE STANDARD NOTE SHEET.

3"Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.

STEEL IN THE BOTTOM SLAB MAY BE SPLICED AT THE PERMITTED CONSTRUCTION JOINT AT THE CONTRACTOR'S OPTION. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED IN THE BARREL, SPACED TO LIMIT THE POURS TO A MAXIMUM OF 70 FT. LOCATION OF JOINTS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER. CONSTRUCTION JOINTS SHALL BE A MINIMUM OF 10' FROM THE END OF THE BARREL AND SHALL NOT BE LOCATED WITHIN 14' NORMAL OF PROPOSED TRACK LOCATION.

CULVERT AND WINGS SHALL BE CONSTRUCTED USING CAST-IN-PLACE CONCRETE WITH f'c = 4,500 psi. FOR CONCRETE AND REINFORCING, SEE "CAST-IN-PLACE CONCRETE" SPECIAL PROVISION.

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:

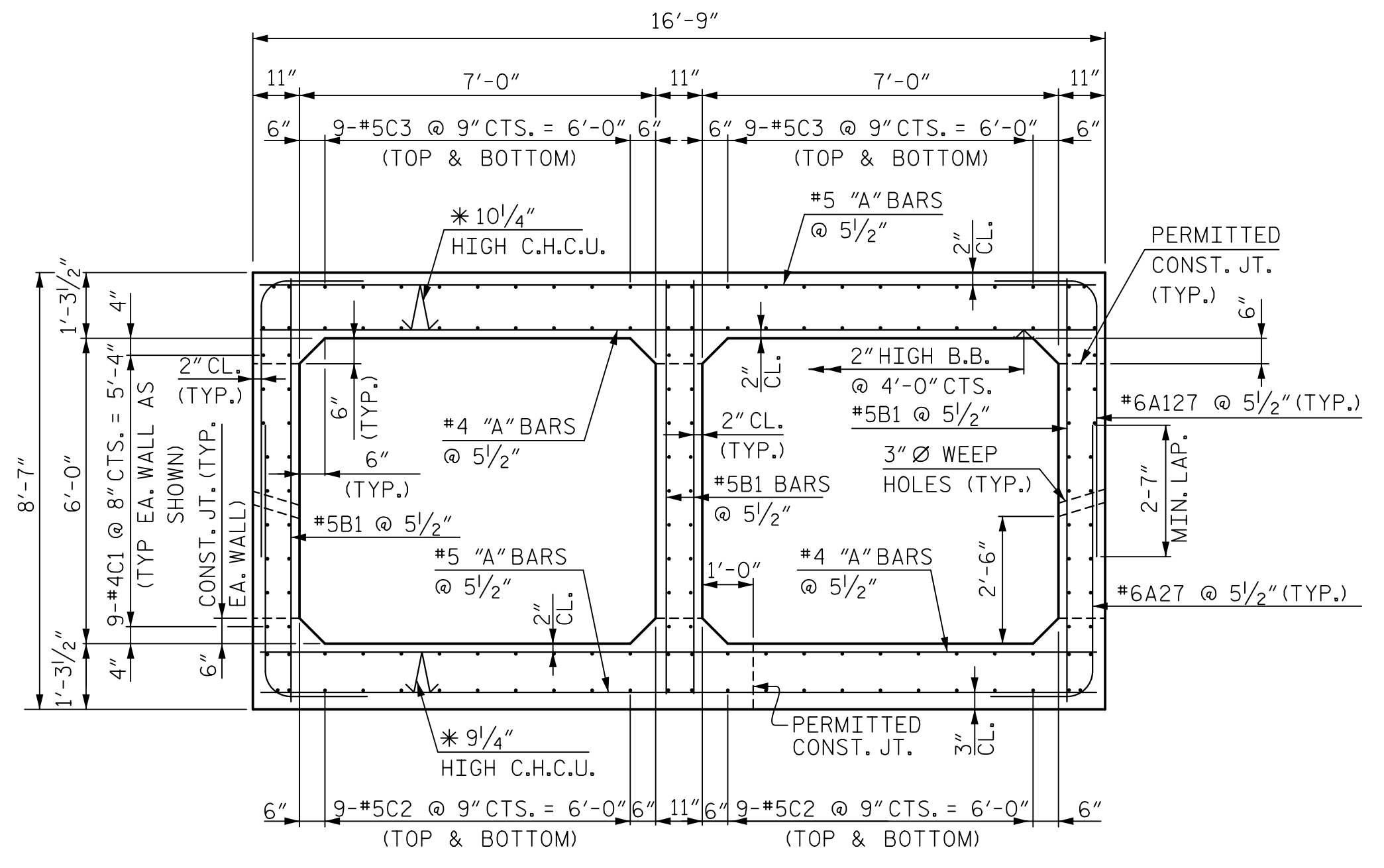
1. WING FOOTINGS AND FLOOR SLAB INCLUDING 6" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL AND BOTH FACES OF INTERIOR WALLS ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

NO BACKFILLING OF EXTERIOR WALLS SHALL BE PERMITTED UNTIL TOP SLAB HAS BEEN PLACED AND CURED. CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARILY BRACING WALLS UNTIL TOP SLAB IS COMPLETED.

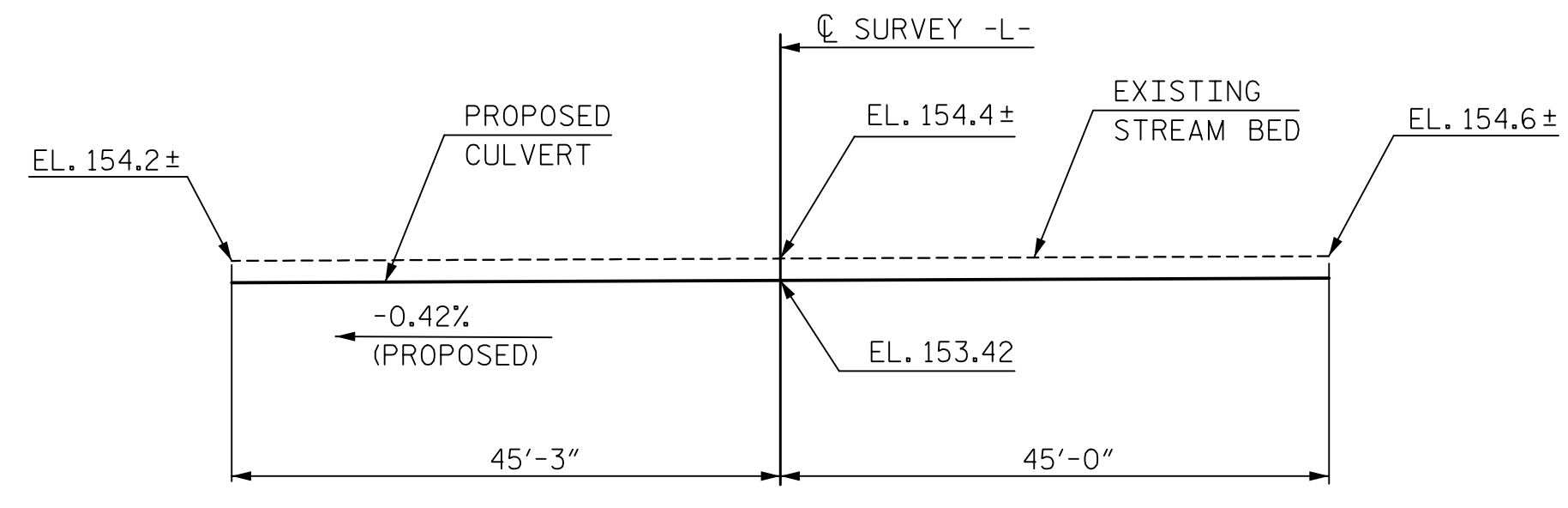
BED MATERIAL PLACED BETWEEN SILLS IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL BETWEEN THE LOWER SILLS. THE MATERIAL SHALL BE NATURAL STONE WITH A GRADATION SIZE SIMILAR TO THAT OF CLASS I RIP RAP. BED MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.  
FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.  
FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.  
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.



RIGHT ANGLE SECTION OF BARREL  
THERE ARE 150 LINES OF "C" BARS IN SECTION OF BARREL

\* ALL CONTINUOUS HIGH CHAIR UPPER (CHCU) @ 3'-0" CTS.



PROFILE ALONG CULVERT

THE AREA CONTAINING THE CULVERT IS TO BE UNDERCUT TO PROVIDE THE NECESSARY STABILITY FOR THE TRACKBED. SEE TRACKWORK PLANS FOR DETAILS. NO UNDERCUT PAY ITEM ASSOCIATED WITH THE CULVERT CONSTRUCTION IS REQUIRED.

PROJECT NO. P-4900A  
ROBESON COUNTY  
STATION: POC 55+31.95 -L-  
MILE POST: 0.86

SHEET 1 OF 6



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**GENERAL DRAWING**

DOUBLE 7' X 6'  
CONCRETE BOX CULVERT  
AT POC STA. 55+31.95 -L-

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-1
1	J. BAYNE	7/14	3			TOTAL SHEETS
2	P. BARBER	8/14	4			6

**HNTB** HNTB NORTH CAROLINA, P.C.  
License No. C-1554  
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY: J. BAYNE DATE: 7/14  
CHECKED BY: P. BARBER DATE: 8/14 DWG. NO. 1